

SEMESTER II
MAJOR COURSE – MJ 2
CRYSTALLOGRAPHY & MINERALOGY
MODEL QUESTION PAPER – SET 1

Full Marks: 75 Time: 3 Hours

GROUP A

Q1. Choose the correct answer. ($5 \times 1 = 5$)

1. Which of the following is a crystal system? (a) Cubic (b) Volcanic (c) Sedimentary (d) Metamorphic
2. The angle between crystallographic axes is called a: (a) Crystal parameter (b) Axial angle (c) Cleavage angle (d) Optic angle
3. Which mineral group is a major component of many igneous rocks? (a) Feldspar (b) Halite (c) Gypsum (d) Calcite
4. Quartz is composed mainly of: (a) SiO_2 (b) CaCO_3 (c) KAlSi_3O_8 (d) MgSiO_3
5. Which property is commonly used in optical mineral identification? (a) Birefringence (b) Density only (c) Magnetism only (d) Radioactivity

Q2. Explain the basic elements of crystal symmetry and distinguish between symmetry axis, plane and centre. (5 marks)

Q3. Define a mineral and describe its important physical and chemical properties. (5 marks)

GROUP B

Answer any FOUR questions. Each question carries 15 marks. ($4 \times 15 = 60$)

Q4. Explain crystal morphology, crystallographic parameters and indices. Discuss the classification of crystals into six crystal systems. (15 marks)

Q5. Describe crystal symmetry and stereographic projections. Explain the projection of important symmetry elements and crystal forms. (15 marks)

Q6. Define minerals and discuss their classification. Describe the structures of silicate and non-silicate minerals with suitable examples. (15 marks)

Q7. Explain the structures of close-packed crystals. Discuss C.C.P. and H.C.P. structures and their geological significance. (15 marks)

Q8. Describe the nature of light and the principles of optical mineralogy. Explain the important properties observed under a petrological microscope. (15 marks)

Q9. Discuss the physical, chemical and optical properties, occurrence and identification of olivine, pyroxene, amphibole, quartz and feldspar. (15 marks)